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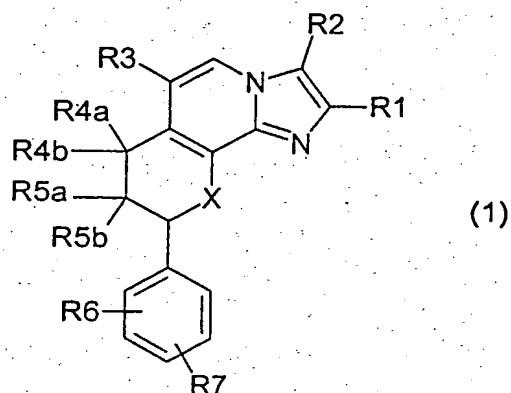
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Patent claims

1. A compound of the formula 1



in which

R1 is hydrogen, 1-4C-alkyl or hydroxy-1-4C-alkyl,

R2 is hydrogen, 1-4C-alkyl, hydroxy-1-4C-alkyl, halogen, 2-4C-alkenyl or 2-4C-alkynyl,

R3 is hydrogen, halogen, trifluoromethyl, 1-4C-alkyl, 2-4C-alkenyl, 2-4C-alkynyl, carboxyl, -CO-1-4C-alkoxy, hydroxy-1-4C-alkyl, 1-4C-alkoxy-1-4C-alkyl, fluoro-1-4C-alkoxy-1-4C-alkyl or the radical -CO-NR3aR3b,

one of the substituents R4a and R4b is hydrogen and the other is hydroxyl, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkoxy, 1-4C-alkylcarbonyloxy or the radical R4', or in which R4a and R4b together are O (oxygen),

where R4' is a radical from which a hydroxyl group is formed under physiological conditions,

one of the substituents R5a and R5b is hydrogen and the other is hydrogen, hydroxyl, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkoxy, 1-4C-alkylcarbonyloxy or the radical R5', or in which R5a and R5b together are O (oxygen),

where R5' is a radical from which a hydroxyl group is formed under physiological conditions,

where

one of the substituents R4a and R4b must have the meaning R4' and/or one of the substituents R5a and R5b must have the meaning R5',

R6 is hydrogen, halogen, 1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkoxycarbonylamino, 1-4C-alkoxy-1-4C-alkoxycarbonylamino or trifluoromethyl,

R7 is hydrogen, halogen, 1-4C-alkyl or 1-4C-alkoxy and

X is O (oxygen) or NH,

where

R3a is hydrogen, 1-7C-alkyl, hydroxy-1-4C-alkyl or 1-4C-alkoxy-1-4C-alkyl and

R3b is hydrogen, 1-7C-alkyl, hydroxy-1-4C-alkyl or 1-4C-alkoxy-1-4C-alkyl,

or where

R3a and R3b together, including the nitrogen atom to which both are bonded, are a pyrrolidino, piperidino or morpholino radical,

or its salts.

2. A compound of the formula 1 as claimed in claim 1, in which

R1 is 1-4C-alkyl,

R2 is 1-4C-alkyl or hydroxy-1-4C-alkyl,

R3 is hydrogen, halogen, carboxyl, -CO-1-4C-alkoxy, hydroxy-1-4C-alkyl, 1-4C-alkoxy-1-4C-alkyl, fluoro-1-4C-alkoxy-1-4C-alkyl or the radical -CO-NR3aR3b,

one of the substituents R4a and R4b is hydrogen and the other is hydroxyl, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkoxy or the radical -OR', or in which R4a and R4b together are O (oxygen),

one of the substituents R5a and R5b is hydrogen and the other is hydroxyl, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkoxy or the radical -OR', or in which R5a and R5b together are O (oxygen),

where one of the substituents R4a and R4b must have the meaning -OR' and/or one of the substituents R5a and R5b must have the meaning -OR',

R6 is hydrogen, halogen, 1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkoxycarbonylamino, 1-4C-alkoxy-1-4C-alkoxycarbonylamino or trifluoromethyl,

R7 is hydrogen, halogen, 1-4C-alkyl or 1-4C-alkoxy and

X is O (oxygen) or NH,

where

R3a is hydrogen, 1-7C-alkyl, hydroxy-1-4C-alkyl or 1-4C-alkoxy-1-4C-alkyl and

R3b is hydrogen, 1-7C-alkyl, hydroxy-1-4C-alkyl or 1-4C-alkoxy-1-4C-alkyl,

or where

R3a and R3b together, including the nitrogen atom to which both are bonded, are a pyrrolidino, piperidino or morpholino radical,

and where

R' is selected from the group consisting of

-C(O)-NR8R9,

-C(O)-alk-NR8R9,

-C(O)-alk-C(O)-NR₈R₉,
 -P(O)(OH)₂,
 -S(O)₂NR₈R₉,
 -C(O)-R₈,
 -C(O)-C₆H₃R₁₀R₁₁,
 -C(O)-OR₈,
 -C(O)-alk-C(O)-R₈,
 -C(O)-alk-C(O)-OR₈,
 -C(O)-C(O)-R₈,
 -C(O)-C(O)-OR₈ and
 -CH₂-OR₈,

where

alk is 1-7C-alkylene,

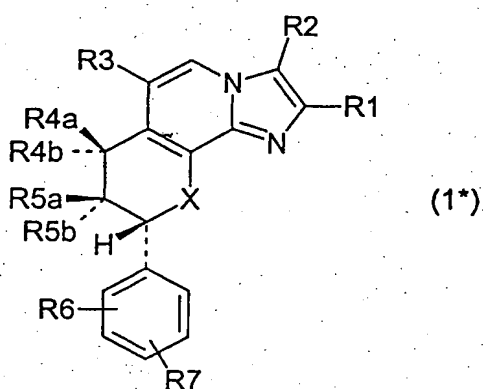
R₈ is hydrogen, 1-10C-alkyl or 1-4C-alkyl substituted by halogen; carboxyl, hydroxyl, sulfo (-SO₃H), sulfamoyl (-SO₂NH₂), carbamoyl (-CONH₂), 1-4C-alkoxy or 1-4C-alkoxycarbonyl,

R₉ is hydrogen or 1-4C-alkyl,

R₁₀ is hydrogen, halogen, nitro, 1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkoxycarbonyl, 1-4C-alkoxycarbonylamino, 1-4C-alkoxy-1-4C-alkoxycarbonylamino or trifluoromethyl und

R₁₁ is hydrogen, halogen, 1-4C-alkyl or 1-4C-alkoxy.
 or its salts.

3. A compound as claimed in claim 1, having the formula 1*



in which

R₁ is 1-4C-alkyl,

R₂ is 1-4C-alkyl,

R3 is hydrogen, chlorine, fluorine, hydroxymethyl, difluoromethoxymethyl or the radical -CO-NR3aR3b,

one of the substituents R4a and R4b is hydrogen and the other is hydroxyl, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkoxy or the radical -OR', or in which R4a and R4b together are O (oxygen), one of the substituents R5a and R5b is hydrogen and the other is hydroxyl, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkoxy or the radical -OR', or in which R5a and R5b together are O (oxygen), where one of the substituents R4a and R4b must have the meaning -OR' and/or one of the substituents R5a and R5b must have the meaning -OR',

R6 is hydrogen,

R7 is hydrogen and

X is O (oxygen) or NH,

where

R3a is hydrogen, 1-4C-alkyl, hydroxy-1-4C-alkyl or 1-4C-alkoxy-1-4C-alkyl and

R3b is hydrogen, 1-4C-alkyl, hydroxy-1-4C-alkyl or 1-4C-alkoxy-1-4C-alkyl,

and where

R' is selected from the group consisting of

-C(O)-NR8R9,

-C(O)-alk-NR8R9,

-C(O)-alk-C(O)-NR8R9,

-P(O)(OH)₂,

-S(O)₂NR8R9,

-C(O)-R8,

-C(O)-C₆H₃R10R11,

-C(O)-OR8,

-C(O)-alk-C(O)-OR8,

-C(O)-C(O)-OR8 and

-CH₂-OR8,

where

alk is 1-7C-alkylene,

R8 is hydrogen, 1-10C-alkyl or 1-4C-alkyl substituted by carboxyl or sulfo (-SO₃H),

R9 is hydrogen or 1-4C-alkyl,

R10 is hydrogen, halogen, nitro, 1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkoxycarbonyl, 1-4C-alkoxycarbonylamino, 1-4C-alkoxy-1-4C-alkoxycarbonylamino or trifluoromethyl and

R11 is hydrogen, halogen, 1-4C-alkyl or 1-4C-alkoxy,

or its salts of the compounds.

4. A compound as claimed in claim 1, which has the formula 1* in claim 3,
in which

R1 is methyl,

R2 is methyl,

R3 is hydrogen, chlorine, fluorine, hydroxymethyl, difluoromethoxymethyl or the radical
-CO-NR3aR3b,

one of the substituents R4a and R4b is hydrogen and the other is 1-4C-alkoxy or 1-4C-alkoxy-1-
4C-alkoxy,

one of the substituents R5a and R5b is hydrogen and the other is the radical -OR',

R6 is hydrogen,

R7 is hydrogen and

X is O (oxygen) or NH,

where

R3a is hydrogen, methyl, ethyl, propyl, 2-hydroxyethyl or 2-methoxyethyl and

R3b is hydrogen, methyl or ethyl,

and where

R' is selected from the group consisting of

-C(O)-NR8R9,

-C(O)-alk-NR8R9,

-C(O)-alk-C(O)-NR8R9,

-P(O)(OH)₂,

-S(O)₂NR8R9,

-C(O)-R8,

-C(O)-C₆H₃R10R11,

-C(O)-OR8,

-C(O)-alk-C(O)-OR8,

-C(O)-C(O)-OR8 and

-CH₂-OR8,

where

alk is 1-7C-alkylene,

R8 is hydrogen, 1-10C-alkyl or 1-4C-alkyl substituted by carboxyl or sulfo (-SO₃H),

R9 is hydrogen or 1-4C-alkyl,

R10 is hydrogen, halogen, nitro, 1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkoxycarbonyl or
trifluoromethyl and

R11 is hydrogen or halogen,
or the salts of the compound.

5. A compound as claimed in claim 4, in which R' has the meaning -C(O)-N(CH₃)₂, -C(O)-N(C₂H₅)₂, -C(O)-NHC₂H₅, -C(O)-CH₂CH₂NH₂, -C(O)-(CH₂)₃NH₂, -C(O)-C(CH₃)₂NH₂, -C(O)-CH₂N(CH₃)₂, -C(O)-CH(NH₂)-CH(CH₃)₂, -C(O)-CH(NH₂)CH(CH₃)C₂H₅, -C(O)-(CH₂)₆C(O)N(CH₃)CH₂CH₂SO₃H, -P(O)(OH)₂, -S(O)₂NH₂, -C(O)-H, -C(O)-C(CH₃)₃, -C(O)-CH₂CH₂COOH, -C(O)-CH₃, -C(O)-C₂H₅, -C(O)-CH₂OCH₃, -C(O)-C₆H₅, -C(O)-C₆H₄-4-NO₂, -C(O)-C₆H₄-3-NO₂, -C(O)-C₆H₄-4-OCH₃, -C(O)-C₆H₄-4-C(O)-OCH₃, -C(O)-OCH₃, -C(O)-O-menthyl, -C(O)-CH₂-C(O)-OCH₃, -C(O)-CH₂CH₂-C(O)-OCH₃, -C(O)-C(O)-OCH₃, -C(O)-C(O)-OC₂H₅ or -CH₂OCH(CH₃)₂.

6. A compound as claimed in claim 1, which has the formula 1* in claim 3,
in which

R1 is methyl,

R2 is methyl,

R3 is hydrogen, chlorine, fluorine, hydroxymethyl, difluoromethoxymethyl or the radical
-CO-NR_{3a}R_{3b},

one of the substituents R_{4a} and R_{4b} is hydrogen and the other is 1-4C-alkoxy or 1-4C-alkoxy-1-4C-alkoxy,

R_{5a} is the radical -OR',

R_{5b} is hydrogen,

R₆ is hydrogen,

R₇ is hydrogen and

X is O (oxygen) or NH,

where

R_{3a} is hydrogen, methyl, ethyl, propyl, 2-hydroxyethyl or 2-methoxyethyl and

R_{3b} is hydrogen, methyl or ethyl,

and where

R' is selected from the group consisting of

-C(O)-NR₈R₉,

-C(O)-alk-NR₈R₉,

-C(O)-R₈

-C(O)-C₆H₃R₁₀R₁₁,

-C(O)-OR₈,

-C(O)-alk-C(O)-OR₈, and

-C(O)-C(O)-OR₈,

where

alk is 1-4C-alkylene,

R₈ is hydrogen, 1-10C-alkyl or 1-4C-alkyl substituted by 1-4C-alkoxy,

R₉ is hydrogen or 1-4C-alkyl,

R₁₀ is hydrogen, halogen, nitro, 1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkoxycarbonyl or trifluoromethyl and

R₁₁ is hydrogen or halogen,

or its salts.

7. A compound as claimed in claim 1, which has the formula 1* in claim 3,

in which

R₁ is methyl,

R₂ is methyl,

R₃ is hydrogen,

one of the substituents R_{4a} and R_{4b} is hydrogen and the other is 1-4C-alkoxy or 1-4C-alkoxy-1-4C-alkoxy,

R_{5a} is the radical -OR',

R_{5b} is hydrogen,

R₆ is hydrogen,

R₇ is hydrogen and

X is O (oxygen) or NH,

where

R' is selected from the group consisting of

-C(O)-NR₈R₉,

-C(O)-alk-NR₈R₉,

-C(O)-R₈

-C(O)-C₆H₃R₁₀R₁₁,

-C(O)-OR₈,

-C(O)-alk-C(O)-OR₈, and

-C(O)-C(O)-OR₈,

where

alk is 1-4C-alkylene,

R₈ is hydrogen, 1-10C-alkyl or 1-4C-alkyl substituted by 1-4C-alkoxy,

- R9 is hydrogen or 1-4C-alkyl,
R10 is hydrogen, nitro, 1-4C-alkoxy or 1-4C-alkoxycarbonyl and
R11 is hydrogen,
or its salts.

8. A compound as claimed in claim 7, in which R' has the meaning -C(O)-N(CH₃)₂, -C(O)-N(C₂H₅)₂, -C(O)-NHC₂H₅, -C(O)-CH₂N(CH₃)₂, -C(O)-H, -C(O)-CH₃, -C(O)-C₂H₅, -C(O)-CH₂OCH₃, -C(O)-C₆H₅, -C(O)-C₆H₄-4-NO₂, -C(O)-C₆H₄-3-NO₂, -C(O)-C₆H₄-4-OCH₃, -C(O)-C₆H₄-4-C(O)-OCH₃, -C(O)-OCH₃, -C(O)-O-menthyl, -C(O)-CH₂-C(O)-OCH₃, -C(O)-CH₂CH₂-C(O)-OCH₃, -C(O)-C(O)-OCH₃ or -C(O)-C(O)-OC₂H₅.

9. A medicament comprising a compound as claimed in claim 1 and/or a pharmacologically tolerable salt thereof together with customary pharmaceutical excipients and/or vehicles.

10. The use of compounds as claimed in claim 1 and their pharmacologically tolerable salts for the prevention and treatment of gastrointestinal diseases.